

MARINE AND FRESHWATER MOLLUSKS NEW TO THE
FAUNA OF CUBA

BY H. A. PILSBRY AND C. G. AGUAYO

The present paper is based mainly on a collection of Cuban marine mollusks brought by the junior author to the Academy of Natural Sciences of Philadelphia to be identified. Most of the shells were collected by Dr. Pedro J. Bermudez, Miguel Jaume and C. G. Aguayo, but in addition, species from other sources are also included.

Among the bulk of common forms here listed for a better knowledge of their geographic distribution, six new species described in this paper and others not before reported or little known from Cuba, were found.

HAMINOEA ELEGANS (Gray). *Bulla elegans* Gray, 1825, Ann. of Philos., New Ser., 9, p. 408.

La Chorrera, Habana. A single specimen, coll. by C. G. Aguayo.

ACTEOCINA BULLATA (Kiener). *Tornatella bullata* Kiener, Sp. et Icon. Coq. Viv., p. 5, pl. 1, fig. 4.

La Chorrera, Habana. One specimen, collected by C. G. Aguayo.

HEBETANCYLUS CUBENSIS, sp. nov. Plate 6, figs. 1, 1a, 1b.

Charco Mercedes, Holguin, Oriente. Type No. 160202, A.N.S.P., José A. Garcia Castaneda, coll.

Shell oblong, brittle, glassy, translucent, of ivory yellow color. Sculpture formed by fine radiating riblets and minute concentric striae. The axial riblets do not reach the apex, which is densely and finely pitted; the punctation irregular, not disposed radially. Anterior slope and left side convex, posterior declivity concave, right side straight. Apex posterior, curved to the right and slightly bent downward. Apical depression round, small and situated at the vertex.

Length 7 mm., diam. 5 mm., alt. 2 mm. Paratype.

Length 7.2 mm., diam. 4.6 mm., alt. 2 mm. Holotype.

Paratypes in the collection of C. G. Aguayo. Differs from *H. adelinus* Bourg., to which it seems to be very closely related, by its larger size, the concavity of its posterior end (straight in *adelinus*), and by having the apex more curved;

the shell being narrower and less elevated, the proportions of height varies from 20 to 30 per cent, while in *adelinus* it varies from 34 to 50 per cent.

In the proportions this species is similar to *Ferrissia* (*Laevapex*) *pallida* Poey, from which it differs by having conspicuous concentric striation (obsolete or none in *pallida*). Poey did not describe the apical sculpture of his species, but some specimens collected in Havana by Arango, which agree with his description by lacking the concentric striation, have the apex smooth.

TEREBRA LIMATULA ACRIOR Dall. *Terebra limatula* var. *acrior* Dall, 1899, Bull. Mus. Comp. Zool., vol. 18, p. 66.

La Chorrera, Habana. Several specimens collected by C. G. Aguayo.

DRILLIA EBUR Reeve. *Pleurotoma ebur* Reeve, 1845, Conch. Icon., 1, *Pleurotoma*, pl. 11, fig. 275.

La Chorrera, Habana. One specimen collected by Miguel Jaume.

MARGINELLA DENTICULATA Conrad. *Marginella denticulata* Conrad, 1830, Journ. Acad. Nat. Sci. Philad., 6, p. 225.

La Chorrera, Habana, C. G. Aguayo; Varadero, Matanzas, P. J. Bermudez.

MELANELLA ACUTA (Sowerby). *Eulima acuta* Sowerby, 1834, Pr. Zool. Soc. Lond., p. 8.

La Chorrera, Habana. One specimen collected by C. G. Aguayo.

MELANELLA HYPSELA (Verrill and Bush). *Eulima hypsela* Verrill and Bush, 1900, Trans. Conn. Acad. Art. Sci., 10, p. 526, pl. 64, fig. 9.

Varadero, Matanzas. A single specimen collected by P. J. Bermudez.

MELANELLA BERMUDEZI, sp. nov. Plate 6, fig. 3.

Varadero, Matanzas, a single specimen. P. J. Bermudez collection, 1932. Type 160204 A.N.S.P.

Shell white, smooth, transparent, showing the columellar

axis in all the whorls; very elongated, wholly arcuated, the apical third much more so. Whorls 12, very slightly convex. Suture linear, oblique. An infrasutural line is visible on each whorl at about $\frac{1}{4}$ the length of the whorl. Growth rest grooves arcuate, in a vertical series on the concave side of the shell. Both suture and infrasutural lines descend to each growth rest, ascending after it, forming an acute angle. Last whorl very long. Aperture lanceolate, acute superiorly; columellar margin broadly concave, external lip almost straight, convex in profile. Length 4.3 mm., diam. 0.9 mm., aperture 1 mm. long.

This graceful little shell is easily recognizable by its glassy transparence, its arcuate shape and its elongate last whorl and aperture.

PYRAMIDELLA NIVEA (Moerch). *Obeliscus niveus* Moerch, 1875, Malak. Bl., 22, p. 159.

Varadero, Matanzas, collected by P. J. Bermudez; La Chorrera, Habana, C. G. Aguayo collector.

ODOSTOMIA BABYLONIA C. B. Adams. *Odostomia babylonia* C. B. Adams, 1845, Pr. Bost. Soc. Nat. Hist., 2, p. 6.

La Chorrera, Habana, one specimen collected by C. G. Aguayo; La Habana, one specimen collected by A. A. Olsson.

ODOSTOMIA (MIRALDA) HAVANENSIS, sp. nov. Plate 6, fig. 4.

La Chorrera, Habana, one specimen collected by C. G. Aguayo. Holotype, Ac. Nat. Sci. Philad., No. 159722. La Habana, two specimens collected by A. A. Olsson. Paratypes.

The shell is lengthened ovate conic, white. Nuclear whorl smooth, large and bulbous, with the tip depressed. Subsequent whorls of the spire bicarinate, the keels obtuse, strongly tubercular, and separated by a deep concavity. On the last whorl the second tubercular keel forms the periphery, and there are three strong, cord-like smooth keels on the base, the lower one smallest. The aperture is ovate; no columellar fold visible.

Length 1.95 mm., diam. 0.9 mm., aperture 0.6 mm. long.; diam. of nucleus 0.2 mm. $4\frac{1}{2}$ postnuclear whorls. Type.

Length 2 mm., diam. 0.95 mm. Topotypes.

CERITHIUM ATRATUM Born. *Cerithium atratum* Born., 1780, Mus. Caes. Vind., p. 324, pl. 11, figs. 17, 18.

La Chorrera, Habana, M. Jaime collector; Punta de Sabanilla, Matanzas, E. Portuondo, collector.

CERITHIOPSIS GREENII (C. B. Adams). *Cerithium greenii*
C. B. Adams, 1839, Bost. Journ. Nat. Hist., 2, p. 287.
La Chorrera, Habana, C. G. Aguayo collector.

TRIPHORA HEBES Watson. *Cerithium hebes* Watson, 1881,
Journ. Linn. Soc., 15, p. 103.

La Chorrera, Habana, C. G. Aguayo. A single young specimen.

TRIPHORA NIGROCINCTA (C. B. Adams). *Cerithium nigro-*
cinctum C. B. Adams, 1839, Bost. Journ. Nat. Hist., 2, p.
286, pl. 4, fig. 11.

La Habana. Coll. Acad. Nat. Sci. Phila.

TRIPHORA SOMERSI Dall and Bartsch.

Varadero, Matanzas, P. J. Bermudez collector. Four specimens.

BIVONIA DECUSSATA (Lamarck). *Serpula decussata* La-
marck, 1818, Anim. sans Vert., 5, p. 363.

La Chorrera, Habana, C. G. Aguayo collector.

LITTORINA MINIMA (Wood). *Turbo minimus* Wood, 1828,
Suppl. Index Test., p. 19, pl. 6, fig. 29 n.

La Punta, Habana, H. N. Lowe. Five specimens.

RISSOINA BROWNIANA LAEVISSIMA (C. B. Adams). *Rissoa*
laevissima C. B. Adams, 1850, Contr. to Conch., p. 115.

Varadero, Matanzas, P. J. Bermudez collector; La Chorrera, Habana, C. G. Aguayo collector.

Adams' type lot, as well as a series from Varadero, show intergradation of characters between *R. browniana* Orb. and *R. sloaneana* Orb. The number of whorls varies from 7 to 8 (5-6 in *sloaneana* and 8-9 in typical *browniana*); the apex is similar to that of *browniana* but the apertures of most of the specimens have the internal teeth characteristic of *sloaneana*. Perhaps the last species is only an extremely short variety of *browniana*.

RISSOINA KREBSI Moerch. *Rissoa krebsi* Moerch, 1876,
Malak. Bl., p. 50.

La Habana, Olsson collector.

HYDROBIA TORREI, sp. nov. Plate 6, fig. 2.

Quinta de los Molinos, Habana. One specimen, No. 160199 A.N.S.P., collected by C. G. Aguayo.

Shell very narrowly umbilicated, conic, of horn color, with three pale brown bands on the last whorl, the upper band very faint. Sculpture of minute growth lines and faint microscopic spiral striae, visible only under high magnification. Last whorl large, convex. Aperture ovate, angular above, otherwise rounded; outer lip simple, columellar lip expanded, forming a subtriangular callus at the parietal wall.

Length 3.5 mm., diam. 2.5 mm.; aperture 1.75 mm. long.

This shell is remarkable for the presence of colored bands on the last whorl, a condition common in the Viviparidae, but very unusual in Amnicolidae. There is no other shell of the genus with which it can be confused.

TEGULA (OMPHALIUS) HOTESSERIANA (Orb.).

Trochus hotesserianus Orb., 1842, Sagra, Hist. Cuba, Mollusques, 2, p. 59.

Trochus maculostriatus C. B. Adams, 1845, Pr. Bost. Soc. Nat. Hist., 5, p. 59.

La Chorrera, Habana, M. Jaume collector.

Although the synonymy of the two names has been recognized for a long time, the priority has often been given to Adams' species, inverting the true order of publication.

TEGULA (OMPHALIUS) SUBSTRIATA (Pilsbry). *Chlorostoma substriatum* Pilsbry, 1889, Man. of Conch., 11, p. 187, pl. 29, fig. 78.

La Chorrera, Habana, M. Jaume, collector.

HAPLOCOCHLIAS SWIFTI Vanatta. *Haplocochlias swifti* Vanatta, 1913, Pr. Acad. Nat. Sci. Phila., p. 23, fig. 3.

La Chorrera, Habana, one specimen collected by C. G. Aguayo.

CIRCULUS CUBANUS, sp. nov. Plate 6, figs. 6, 6a, 6b.

Varadero, Mantanzas, P. J. Bermudez collector. One specimen, the holotype, No. 160198 A.N.S.P.

Shell small, vitreous, flattened, widely umbilicated. Whorls 4. Nucleus small, smooth. Spire depressed. Suture distinct.

Last whorl with six spiral threads: three strong keels on the periphery, in profile situated in an oblique straight line, the lowest keel being the outer; above the peripheric keels, midway between the upper one and the suture, there is a spiral cord; below the keels, on the basal area, there are two cords, one around the umbilical area, the other midway between it and the lower peripheric keel. There is also a faint, microscopic spiral striation between the keels. Aperture rounded; outer lip thick, externally modified by the spiral threads; columellar lip slightly callous.

Height 1 mm., diam 0.45 mm.

This shell is very remarkable by the position of its six spiral ribs of the last whorl, and mainly by having three strong peripheric keels in the same straight line in profile view.

FISSURELLA ROSEA (Gmelin). *Patella rosea* Gmelin, 1792, Syst. Nat. Edit. 13, p. 3730.

Varadero, Matanzas, C. G. Aguayo collector.

DIADORA ALTERNATA (Say). *Fissurella alternata* Say, 1822, Journ. Acad. Nat. Sci. Philad., 2, p. 281.

Playa de Guanimar, Habana, J. Aguayo collector.

DIADORA VIRIDULA (Lamarck). *Fissurella viridula* Lamarck, 1822, An. sans Vert., 6, p. 13.

La Chorrera, Habana, C. G. Aguayo collector.

This species was not mentioned by Arango in his "Fauna Malac. Cubana" though it was reported from Cuba by Pfeiffer in 1840, Wieg. Arch. f. Naturg.

COECUM BRASILICUM de Folin. *Coecum brasilicum* de Folin, 1875, Les Fonds de la Mer, 2, p. 212, pl. 9, fig. 6.

Peninsula de Hicacos, Matanzas, and Punta Alegre, Camaguey, H. A. Pilsbry collector.

COECUM COOPERI Smith. *Coecum cooperi* Smith, 1862, Ann. N. Y. Lyceum, 7, p. 154.

Varadero, Matanzas, P. J. Bermudez collector.

COECUM FLORIDANUM Stimpson. *Coecum floridanum* Stimpson, 1851, Pr. Bost. Soc. Nat. Hist., 4, p. 112. *Coecum dux* de Folin, Les Fonds de la Mer, 1, p. 264, pl. 24, figs. 4-5.

Punta Alegre, Camaguey, H. A. Pilsbry collector; Varadero, Matanzas, P. J. Bermudez collector.

CAECUM CAROLINIANUM Dall. *Caecum carolinianum* Dall, 1892, Trans. Free Wagner Inst., Philad., 3 (2), p. 300, pl. 22, fig. 25.

Punta Alegre, Camaguey, H. A. Pilsbry collector; Habana, A. A. Olsson collector.

CAECUM FORMOSULUM de Folin. *Coecum formosulum* de Folin, 1868 (?), Les Fonds de la Mer, 1, p. 124, pl. 11, figs. 9, 10.

Punta Alegre, Camaguey, H. A. Pilsbry collector.

CAECUM GLABRUM (Mont.). *Dentalium glabrum* "Mont." J. Fleming, 1813, Brewster's Edinb. Encycl., 7, p. 67.

MEIOCERAS NITIDUM (Stimpson).

Coecum nitidum Stimpson, 1851, Pr. Bost. Nat. Hist., 4, p. 112.

Meioceras leoni Berillon, 1875, in de Folin and Perrier, Les Fonds de la Mer, 2, p. 251, pl. 10, fig. 3.

Batabano, Habana, C. F. Baker collector; Rio Cauto, Oriente, L. Aman collector; Punta Alegre, Camaguey, H. A. Pilsbry collector; Peninsula de Hicacos, Matanzas, H. A. Pilsbry collector; Varadero, Matanzas, P. J. Bermudez collector.

MEIOCERAS CONSTRICTUM, sp. nov. Plate 6, fig. 5.

Varadero, Matanzas, P. J. Bermudez collector, five specimens. Holotype No. 160200 A.N.S.P. Paratypes in collection of C. G. Aguayo.

Shell arcuate, subcylindrical, contracted at both ends, the anterior one being broader. Middle part weakly contracted; external side somewhat saddle-shape. The broadest part near the anterior end, at about $\frac{1}{3}$ of the length of the shell. Aperture circular, very oblique, facing the concave side. Surface white, smooth, shining, with minute growth lines. Septum projecting in a point near the convex side, sloping to the concave side.

Length 1.9 mm., greatest diam. 0.5 mm.

This species is very near *M. nitidum* (Stimpson) in size, color and sculpture, differing mainly by having a saddle-shaped contraction at the middle of the length, and the larg-

est diameter at the anterior third, while in *nitidum* the shell is swollen at the middle, where the largest diameter is located.

CALLISTOCHITON SHUTTLEWORTHIANUS Pilsbry. *Callistochiton shuttleworthianus* Pilsbry, 1892, Man. of Conch., 14, p. 23, pl. 21, figs. 42-45.

Varadero, Matanzas, P. J. Bermudez collector; a single anterior valve.

ARCA (BARBATIA) CHEMNITZI Philippi. *Arca chemnitzi* Philippi, 1851, Zeitschr. f. Malak., 8, p. 50.

Gibara, Oriente, A. Gaston collector.

CRASSINELLA LUNULATA PARVA C. B. Adams.

Varadero, Matanzas, P. J. Bermudez collector.

FIELD NOTES ON CHITONS OF CRESCENT CITY, CALIFORNIA

BY E. P. AND E. M. CHACE

Having occasion to spend some time at Crescent City, California, the writers have taken advantage of the opportunity to do some intensive collecting in the tide pools of the rocky reefs which fringe this coast. To date we have taken over 90 species of mollusks (including 7 nudibranchs) and the chitons have been a prominent part of the local fauna. Perhaps the field notes presented here will be of interest to students who are unable to visit these waters.

Cryptochiton stelleri (Midd.). This active fellow is not uncommon in the lower tide pools. In August and September the smallest specimens seen were four to five inches long. On the December and January tides we found several smaller specimens, the smallest being three-fourths of an inch long. These were on rocks at the outer edge of the tide pools and usually a foot above the lowest tide level. Adult specimens were seldom seen out of water even at the lowest tides.

Lepidochitona lineata (Wood). Common and somewhat variable in color.

Lepidochitona raymondi Pils. The smallest of the common chitons here.